WHAT IS CLAIMED IS:

1.   An image encoding apparatus comprising:

dictionary storage means for storing a plurality of bases based on a predetermined two-dimensional function for generating a predetermined two-dimensional pattern, the predetermined two-dimensional function including parameters for curving the predetermined two-dimensional pattern;

conversion means for decomposing a coding target image by using the plurality of bases on the basis of a predetermined conversion rule, and converting the coding target image into basis information including index information to a basis used for decomposing the coding target image, a coefficient by which the basis specified by the index information is multiplied, and positional information for specifying a position where a pattern made by multiplying the basis specified by the index information by the coefficient is restored; and

encoding means for generating compression data including a compression code made by encoding the basis information on the basis of a predetermined compression coding rule.

2.   An image encoding method comprising:

a conversion step in which conversion means decomposes a coding target image on the basis of a

predetermined conversion rule by using a plurality of bases stored in dictionary storing means and converts the coding target image into basis information including index information to a basis used for decomposing the coding target image, a coefficient by which the basis specified by the index information is multiplied, and positional information for specifying a position where a pattern made by multiplying the basis specified by the index information by the coefficient is restored, wherein the plurality of bases are based on a predetermined two-dimensional function for generating a predetermined two-dimensional pattern, and the predetermined two-dimensional function includes parameters for curving the predetermined two-dimensional pattern; and

an encoding step in which encoding means generates compression data including a compression code made by encoding the basis information on the basis of a predetermined compression coding rule.

3.   An image encoding method according to claim 2, wherein the predetermined two-dimensional function further includes parameters for making the predetermined two-dimensional pattern move, rotate, and expand and shrink in two directions.

4.   An image encoding method according to claim 2, wherein the encoding means incorporates the

parameters of each of the plurality of bases stored in the dictionary storage means in the compression data.

5. An image encoding program allowing a computer to function as:

dictionary storage means for storing a plurality of bases based on a predetermined two-dimensional function for generating a predetermined two-dimensional pattern, the predetermined two-dimensional function including parameters for curving the predetermined two-dimensional pattern;

conversion means for decomposing a coding target image by using the plurality of bases on the basis of a predetermined conversion rule, and converting the coding target image into basis information including index information to a basis used for decomposing the coding target image, a coefficient by which the basis specified by the index information is multiplied, and positional information for specifying a position where a pattern made by multiplying the basis specified by the index information by the coefficient is restored; and

encoding means for generating compression data including a compression code made by encoding the basis information on the basis of a predetermined compression coding rule.

6. An image decoding apparatus comprising:

dictionary storage means for storing a plurality
of bases based on a predetermined two-dimensional
function for generating a predetermined two-dimensional
pattern, the predetermined two-dimensional function
5   including parameters for curving the predetermined two-
dimensional pattern;

decoding means for decoding compression data and
generating a basis information, the compression data
including a compression code made by encoding the basis
10   information including index information to a basis used
for restoring a decoding target image, a coefficient by
which the basis specified by the index information is
multiplied, and positional information for specifying a
position where a pattern made by multiplying the basis
15   specified by the index information by the coefficient
is restored; and

inverse conversion means for generating the
decoding target image by applying a predetermined
inverse conversion rule to the basis information
20   decoded by the decoding means.

7.   An image decoding method comprising:

a decoding step in which decoding means decodes
compression data including a compression code made by
encoding basis information including index information
25   to a basis used for restoring a decoding target image
on the basis of a predetermined inverse conversion rule

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among a plurality of items of index information to a plurality of bases stored in dictionary storage means, a coefficient by which the basis specified by the index information is multiplied, and positional information for specifying a position where a pattern made by multiplying the basis specified by the index information by the coefficient is restored, wherein the plurality of bases are based on a predetermined two-dimensional function which generates a predetermined two-dimensional pattern and includes parameters for curving the two-dimensional pattern; and

an inverse conversion step in which inverse conversion means generates the image for decoding by applying a predetermined inverse conversion rule to the basis information decoded by the decoding means.

8. An image decoding method according to claim 7, wherein the predetermined two-dimensional function further includes parameters for making the predetermined two-dimensional pattern move, rotate, and expand and shrink in two directions.

9. The image decoding method according to claim 7, wherein the decoding means makes the dictionary storing means store the plurality of bases on the basis of parameters for generating each of the plurality of bases included in the compression data.

10. An image decoding program allowing a

computer to function as:

dictionary storage means for storing a plurality of bases based on a predetermined two-dimensional function for generating a predetermined two-dimensional pattern, the predetermined two-dimensional function including parameters for curving the predetermined two-dimensional pattern;

decoding means for decoding compression data and generating a basis information, the compression data including a compression code made by encoding the basis information including index information to a basis used for restoring a decoding target image, a coefficient by which the basis specified by the index information is multiplied, and positional information for specifying a position where a pattern made by multiplying the basis specified by the index information by the coefficient is restored; and

inverse conversion means for generating the decoding target image by applying a predetermined inverse conversion rule to the basis information decoded by the decoding means.